

# VEROMESSOR LOBOGNATHUS: SECOND NOTE (HYMENOPTERA: FORMICIDAE)<sup>1</sup>

GEORGE C. WHEELER and JEANETTE WHEELER  
Department of Biology, University of North Dakota

## ABSTRACT

Previous reports of this rare ant are three from Colorado, one from Nevada, and a dubious one from Missouri. Three colonies have now been found in North Dakota, in 1954, 1957, and 1958, respectively, all on the steep south-facing wall of the same narrow valley in the Little Missouri Badlands. Two nests were in soil under flat rocks; the third was in soil under and near a grass clump, with a messy, irregular mound of excavated earth among the grass culms. Total populations, includ-

ing all stages and castes, in two colonies counted were 1512 and 637, respectively. This harvester ant was collecting and storing seeds of grasses when studied in June and July. It is not aggressive and seems unable to sting, but its bite is annoying. Its most remarkable characteristic is its thoroughly deceptive resemblance to the common western harvesting ant *Pogonomyrmex occidentalis* (Cresson); in fact, it fulfills all the requirements of Wallace's Rules of Batesian Mimicry.

Recently we reported (1956) our discovery in southwestern North Dakota of the rare ant, *Veromessor lobognathus* (Andrews), a putative mimic of *Pogonomyrmex occidentalis* (Cresson). We had collected it unknowingly in the summer of 1954 and found it in our collection in the winter of 1955-56. In the summer of 1956 we revisited the same south-facing slope (figs. 1 and 2) but were unable to relocate the nest, presumably because of drought. The summer of 1957 was a wet season; by the end of June, Roosevelt National Memorial Park had already received 13 inches of precipitation, whereas the annual average is about 16 inches. On June 28, during our first hour afield, we relocated the same rock (fig. 3) and under it found a colony of *V. lobognathus*. We presume it to be the same colony (No. 556) that we sampled in 1954, although we have given it a different field number (2063).

Plants<sup>2</sup> in the immediate vicinity of the nest were *Eurotia lanata* (Pursh) Moq. (winterfat), *Gaura coccinea* Pursh (gaura), *Stipa comata* Trin. and Rupr. (needle-and-thread grass), *Bouteloua gracilis* (H.B.K.) Lag. (blue grama) and *Agropyron smithii* Rydb. (western wheatgrass). Dominants on the slope are *Artemisia tridentata* Nutt. (big sagebrush), *Muhlenbergia cuspidata* (Torr.) Rydb. (plains muhly), *Bouteloua gracilis* and *Agropyron smithii*. The slope was eroded and much of its surface was bare. The nest was on a 22° slope, above which was a moderately vegetated zone with a 15° slope and above that, a 35° slope with relatively little vegetation.

The nearest nest of *Pogonomyrmex occidentalis* was 18 yards to the northwest and the next nearest 20 yards to the southeast. There were nine nests of this species within a radius of 60 yards of the *Veromessor* nest and most of these were lower on the slope.

**The Second Colony.**<sup>3</sup>—Up the same valley, 600 yards to the southeast of colony No. 2063, a short deep steep-walled valley enters from the north.

In the floor of this tributary valley an intermittent stream has cut a steep-sided gully about 4 feet wide and 3 feet deep. On the western brink of this gully we found our second North Dakota colony (No. 2082). The nest of this colony was not under a rock; it was in the soil under and near an isolated clump of grass (*Bouteloua gracilis*). Above the surface among the grass culms was a messy irregular mound of excavated earth. Soil in the vicinity contained numerous rock fragments of assorted sizes, but the mound itself was of earth only. Plants near the nest were *Chrysothamnus graveolens* (Nutt.) Greene (rabbitbrush), *Artemisia tridentata*, and *Rhus trilobata* Nutt. (ill-scented sumac). There were no *Pogonomyrmex occidentalis* nests in this tributary valley.

**The Third Colony.**<sup>4</sup>—On June 13, 1958 we revisited the same valley and, on the same south-facing slope on which we had found our first colony (No. 2063), we found our third colony of *Veromessor lobognathus* (No. 2134). It was located 85 yards farther up the valley and 45 yards higher up the slope (fig. 2). Part of the nest was covered by a flat rock 30" x 18" x 3" (fig. 4), which was inclined at an angle of 45° from the vertical, and which faced southwest, thus receiving a maximum of insolation. There were two entrances under the southeastern edge of the rock near the lower corner. Near the same edge were three exposed entrances leading to

<sup>1</sup>This study was aided by a grant from the Louis W. and Maud Hill Foundation. Accepted for publication July 28, 1958.

<sup>2</sup>Dr. Ralph Dix, Marquette University, inspected the nest area, measured the slope angles and identified many of the plants. Dr. Vera Facey, University of North Dakota, identified the remainder from pressed specimens.

<sup>3</sup>Locality: Billings County, North Dakota, sec. 12, T. 140 N., R. 102 W., Roosevelt National Memorial Park, 4 miles north-northeast of Medora, July 1, 1957.

<sup>4</sup>Locality: Billings County, North Dakota, sec. 12, T. 140 N., R. 102 W., Roosevelt National Memorial Park, 4 miles north-northeast of Medora, June 13, 1958.

not seem particularly effective. They would, however, bite readily and hold on tenaciously. One worker held on to the tender surface of a forearm for 10 minutes. It performed the usual motions of stinging but produced no sensation; apparently the sting did not even enter the skin. The bite, however, was painful for 30 minutes.

	Colony 2063	Colony 2082
Eggs.....	111	
Larvae.....	389	15
Semipupae.....	54	
Pupae.....	24	
	♂	73
	♀	20
Imagines.....	627	533
	♂	149
winged	♀	55
wingless	♀	10
Total.....	1512	637

*Mimicry*.—We have already referred (1956) to the remarkable resemblance of *Veromessor lobognathus* to *Pogonomyrmex occidentalis*. We can

think of no case among ants where the superficial similarity of unrelated species is so close. To be sure they can be distinguished easily with the unaided eye if examined closely in profile; and the nests are utterly different. But the similarities of color, size, habitus, locomotion and harvesting habit are extremely deceptive.

Gregg (1955) has mentioned the possibility of mimicry and, although we do not have enough information to warrant a conclusion, we would like to point out how closely this case fulfills the requirements of Wallace's Rules of Batesian Mimicry:—

1. Both species occur in the same area and occupy the same station.

2. *V. lobognathus* apparently cannot sting, whereas *P. occidentalis* has the most vicious sting of any ant in this area.

3. *P. occidentalis* is one of the most abundant ants in the area; *V. lobognathus* is one of the rarest.

4. *V. lobognathus* differs superficially from its congeners.

5. The resemblances between *V. lobognathus* and *P. occidentalis* are superficial only and do not affect generic characters.

#### REFERENCES CITED

- Gregg, R. E. 1955. The rediscovery of *Veromessor lobognathus* (Andrews) (Hymenoptera: Formicidae). *Psyche* 62: 45-52.
- Wheeler, G. C., and J. Wheeler. 1956. *Veromessor lobognathus* in North Dakota (Hymenoptera: Formicidae). *Psyche* 63: 140-5, 2 figs.